## REMARKS

Reconsideration of this application, as amended, is requested.

Claims 5-14 remain in the application. Claim 5 has been amended to address a clerical error and to define the invention more clearly as being for a fuel injection pipe with a small outside diameter (4-30 mm) and a relatively thick wall (1-8 mm).

The Examiner indicated acceptance of the previously proposed amended drawings. However, the Examiner further noted that the requirements of the United States Patent and Trademark Office have changed and that Replacement Sheets are required.

This Amendment is submitted with the requested Replacement Sheet.

The Examiner withdrew the final rejection upon which the applicant's Appeal Brief was based. However, the Examiner now rejects claims 5, 7-9 and 11-14 under 35 USC 103(a) as being obvious over Eidsmore considered in view of Duret. The Examiner identified the elements of these two references that the Examiner considered to correspond to elements recited in the claims.

There are several fundamental differences between the applied references and the claimed invention. Although the applicant relies upon structural differences between the claimed invention and the applied art, those structural differences have their root in basic functional and intended use differences. Although the applicant does not reply upon those functional and intended use differences to distinguish over the applied art, it is important to emphasize those differences so that the Examiner has a greater appreciation for the importance of the structural differences. The subject invention is directed to a high-pressure fuel injection pipe assembly and is particularly suitable for use in the fuel injection system for a diesel combustion engine. The Examiner and persons

skilled in this art will appreciate that fuel flows at very high pressures in such environments. Additionally, the Examiner and others skilled in this art will appreciate that a leak or a pipe failure can be catastrophic in this environment. Leakage is a particular problem where pipes meet fittings. Leakage can be avoided by soldering or welding the connection. However, the heat generated during a soldering or welding operation makes the welded region less able to exist in a high vibration environment without a significant risk of crack propagation and ultimate failure. Thus, connections that do not rely upon welding or soldering are preferred.

One preferred way of connecting a high-pressure fuel injection pipe to a fitting involves deforming the end of the pipe to create a connecting head adjacent the end. The connecting head has a seat surface configured to mate with a corresponding fitting and the bearing surface facing oppositely from the seat surface. The bearing surface can receive a force generated by a connecting nut to urge the connecting head tightly against a seat in a fitting. The outwardly flared seat surface of the connecting head must be sufficiently large to achieve a good quality seal with the fitting. Additionally, the head must be sufficiently thick to accommodate the pressure exerted by the flowing fuel and by the connecting nut. Unfortunately, the deformation required to form a connecting head of acceptable dimensions also creates a well defined annular groove in the pipe passage at locations near the head. The groove causes turbulence in the flowing diesel fuel and the turbulence causes cavitation erosion as explained in the paragraph of the specification beginning on page 2. A deep annular notch can be avoided by deforming the head less. However, a head that is deformed less provides smaller outer dimensions, including a smaller bearing surface for engagement by a connecting nut.

The subject invention overcomes these problems with the prior art and enables less deformation to create an acceptable connecting head. Thus, the deep annular notch of the prior art connecting head is avoided. However, the unique sleeve washer defined by the claims herein enables the same outer dimensions as the larger prior art connecting head that has the deep annular notch.

The references relied upon now by the Examiner are directed to entirely different environments than the high-pressure fuel injection pipe assembly of the subject invention. Eidsmore is specifically directed to couplings intended for ultra-high vacuum applications. Fittings of this type are widely employed in the semi-conductor industry where certain manufacturing processes must be performed in the presence of specific gases or in the absence of such gases. The Eidsmore fitting is intended specifically for end-to-end connection of two pipes. The pipes shown in the Eidsmore reference has absolutely no annular groove in the passage and hence apparently use a manufacturing process that is suitable for that environment, but unsuitable for the environment in which the subject high-pressure fuel injection pipes are used. The pipes of the Eidsmore reference has no seat surface that is flared outwardly from said first end as required by the claims of the subject application. The drive member 70 of Eidsmore has no cylindrical outer surface facing oppositely from first and second cylindrical inner surfaces and the Eidsmore device would not work if the conically tapered outer surface of the drive member 70 were converted into a cylindrical configuration. Persons skilled in this art would know immediately that an Eidsmore type of fitting for an ultra-high vacuum application cannot be employed in a high-pressure fuel injection system and such persons skilled in the art would

not look to a tube coupling for the end-to-end coupling of two vacuum tubes to address the unique problems encountered in the high-pressure fuel injection art.

The Duret reference is even further removed from the subject application. Duret is directed to lightweight tubes for conveying low pressure flows of fluids on aircraft. The entire lightweight tube is deformed in Duret to form engagement surfaces for the end-to-end coupling of two such pipes. Once again, the low pressure coupling of Duret is entirely unsuitable for a high-pressure fuel injection pipe assembly, and a person skilled in the high pressure fuel injection pipe art would not look to such low pressure lightweight pipes for solving problems unique to the high-pressure fuel environment.

Neither of the references suggests their hypothetical combination, and it is not clear how the references could be combined in a way that is meaningful to or suggestive of the invention defined by the amended claims herein. Neither of the references has an annular groove formed on the inner surface while also having the claimed configuration for the outer surface of the pipe at and adjacent the connecting head. Additionally, neither of the references has a unitarily formed sleeve washer with the cylindrical outer surface facing oppositely from said first and second inner cylindrical surfaces. As a result, the hypothetical combination of these references could not possibly teach such a structure.

Claims 6 and 10 were rejected under 35 USC 103(a) as being obvious over Eidsmore in view of Duret and further in view of Romanelli. Romanelli was cited only in view of the configuration of the seat surface. Romanelli does not overcome the deficiencies of Eidsmore and Duret as described above.

In view of the preceding amendments and remarks, it is submitted that the claims remaining in the application are directed to patentable subject matter, and allowance is solicited. The Examiner is urged to contact applicant's attorney at the number below to expedite the prosecution of this application.

Respectfully submitted,

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